

Analysis and Innovative Application of Decorative Patterns of Tang Dynasty Ceramics Based on Semiotics

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Abstract: In order to explore the cultural connotation and artistic characteristics of Tang Dynasty ceramic decorative patterns, integrate traditional ethnic decorative patterns with modern design, and promote the inheritance and development of excellent traditional culture, this paper first understands the decorative patterns of Tang Dynasty ceramics by reading books and consulting materials, collects representative ceramic utensils of the Tang Dynasty, and extracts the decorative patterns on these cultural relics, analyzes the inner meaning of the patterns through semiotics, and understands their aesthetic characteristics. The use of shape grammar, complexity into simplicity, decomposition and reconstruction of the extracted pattern for innovative design, into the modern aesthetic concept, according to its semantic and visual characteristics into the modern product design and decoration. The Tang Dynasty is a representative period of China's culture, and the combination of Tang Dynasty patterns and modern design is conducive to inheriting the excellent culture of the Tang Dynasty, while increasing the cultural value of modern design and enhancing product competitiveness.

Keywords: Tang Dynasty ceramic decorative patterns, cultural connotations, cultural inheritance, design innovation

1. Introduction

Culture is the soul of a nation and the blood of a nation's inheritance and development. In recent years, China has become increasingly aware of the importance of culture, especially for the inheritance and development of traditional culture. On the one hand, with the continuous improvement of material living conditions, people are paying more attention to the needs of spiritual life. On the other hand, the consolidation and strengthening of cultural soft power plays an extremely important role in national confidence, national identity, social stability and development.

Tang Dynasty is one of the most brilliant dynasties in the history of our country, the economy and culture are extremely developed, ceramic culture in the Tang Dynasty also had a great development, it inherited the northern and Southern Dynasties and Sui Dynasty ceramic achievements, all kinds of utensils with various shapes, unique decorative patterns style. Based on semiotics, this paper analyzes the meaning of tang Dynasty porcelain pattern, understands its cultural connotation and extracts the

pattern elements, and then innovates and applies the extracted elements. On the one hand, it deeply excavates the cultural value of Tang Dynasty porcelain decorative pattern to provide inspiration for modern design. At the same time, it can improve the cultural value of design and enhance the emotional resonance between design and the public. On the other hand, the design innovation of pattern elements can also inject modern energy into the traditional patterns, and the application opens up an effective way for the inheritance of traditional culture.

2. Research Status and Research Ideas

2.1 Research Status Analysis

The tang dynasty in the history of our country has a very bright civilization, both in economy, politics and culture in contemporary is in the world, in terms of tang dynasty of China, for the prosperity of economic, political, the tang dynasty porcelain craft are more mature, also more common in folk life, there are many new varieties of porcelain and ceramics, craft more detailed than the previous generation, In the Tang Dynasty, two ceramic systems of "south Blue and north white" were formed. There are many researches on tang dynasty ceramics by modern scholars, but most of them focus on ceramic technology, and few on patterns, especially in the innovation and application of ceramic patterns. He et al. (2016) explored the innovation of patterns. She deduced the modeling elements of ladies in tang Dynasty by using shape grammar and applied the deduced patterns in the design of ceramic tea sets. Xie (2015) studied the patterns of ethnic minorities in southwest China from three aspects of semantics, structure and pragmatics through semiotics, providing scientific and reasonable research reference for the analysis of patterns.

2.2 Research Ideas

The previous research results provide a good reference for the innovation and application of tang Dynasty ceramic decorative patterns. China's ceramic culture is extensive and profound, and its shapes and patterns have a high degree of cultural symbol recognition. Semiotics can fully analyze its form and the meaning of the representative, and display it in the form of charts. Then select the pattern with prominent shape and meaning as an example for pattern innovation and use. Research ideas are shown in Figure 1.

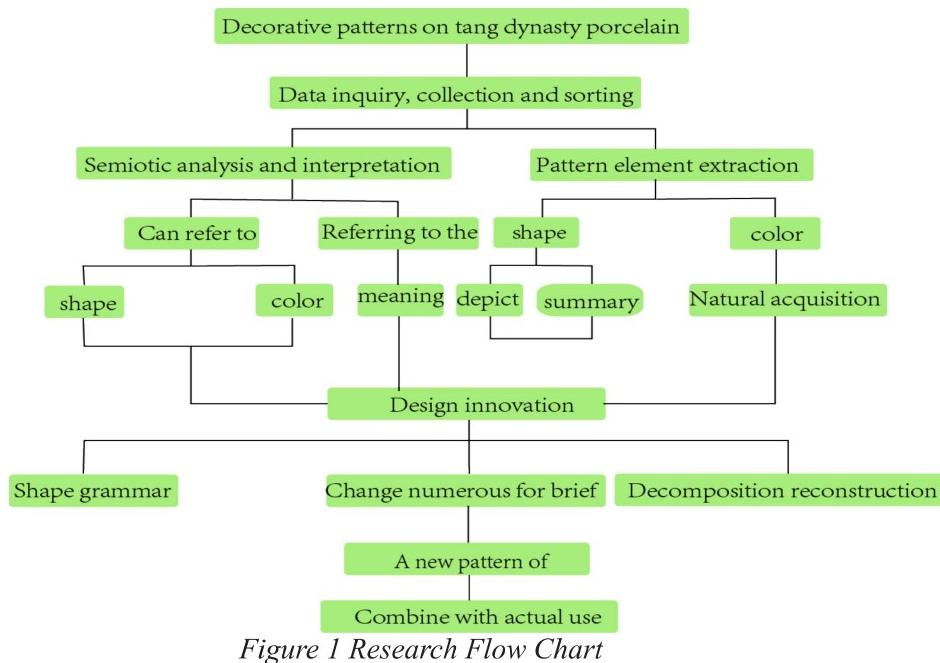


Figure 1 Research Flow Chart

3. Extraction of Decorative Pattern Elements of Tang Dynasty Ceramics and Interpretation from the Perspective of Semiotics

3.1 Extraction of Decorative Pattern Elements of Tang Dynasty Ceramics

In the Tang Dynasty, China's national strength was strong, the economy was prosperous, and the people's life was rich, so the aesthetic of the public also improved. Ceramic decorative pattern richness is a very good reflected this, ceramic decoration pattern involving plants, birds and flowers lines in the tang dynasty, people, animals, and how for a few, which is given priority to with flower pattern, less people, animals and geometric lines, the lotus patterns is the most common, and since the tang dynasty began to appear in this period for peony decoration pattern.

3.1.1 Extraction of Patterns

Ceramic decoration pattern in the tang dynasty is extremely rich, it's hard to do in the process of extraction, so the sampling method is adopted in this study, in the tang dynasty porcelain of high-profile known patterns in a few pieces of cultural relics and books information (some patterns of the carrier has been damaged or only entities fragments, etc., it is recorded in the books information picture), Its pattern is also the most representative of the characteristics of the Tang Dynasty ceramic pattern, the public is also the most understood, later and modern design integration, more easy to cause resonance with users. The extraction of patterns mainly adopts the method of copying and tracing. Simple lines are used to outline and collect patterns on tang dynasty ceramics, and then the

categories of patterns are classified for later statistical analysis. The extraction results are shown in Table 1.

Table 1 Tang Dynasty Ceramic Pattern Sampling Extraction

source ^②	The name of the material ^③	Extraction patterns ^④	Pattern type ^⑤	The name of the pattern ^⑥
	Dragon head handle phoenix head pot ^⑦		Plant patterns ^⑧	Treasure that flower ^⑨
			Character pattern ^⑩	Guinness ^⑪
			Geometric patterns ^⑫	Bead grain ^⑬
			Animal patterns ^⑭	Dragon body, phoenix head ^⑮
	Changsha kiln mold printing paste pot with two ears ^⑯		Plant patterns ^⑰	The leaves ^⑱
			Geometric patterns ^⑲	Bead grain ^⑳
	Changsha kiln painted pattern notes ^㉑		Animal patterns ^㉒	The bird to recognize ^㉓
			Plant patterns ^㉔	Flowers and plants ^㉕
	Mixian kiln pearl parrot pattern pillow ^㉖		Animal patterns ^㉗	The parrot ^㉘
			Plant patterns ^㉙	Volume grass grain ^㉚
	Tricolor petal type three-legged plate ^㉛		Plant patterns ^㉜	The lotus pattern ^㉝
			Geometric patterns ^㉞	Bead grain ^㉟
	Tricolor painting three-legged plate ^㉟		Plant patterns ^㉟	spends ^㉟
			Plant patterns ^㉟	Lotus leaf veins ^㉟
			Plant patterns ^㉟	Flower buds ^㉟
			Plant patterns ^㉟	spends ^㉟
	White glaze double dragon ear bottle ^㉟		Animal patterns ^㉟	dragon ^㉟
	Three-color pedestal ^㉟		Plant patterns ^㉟	Treasure that flower ^㉟
	Changsha kiln mold paste brown spot note ^㉟		Plant patterns ^㉟	The leaves pattern ^㉟
	Data Search (Complete Collection of Chinese Patterns) ^㉟		Combination patterns ^㉟	Character pattern ^㉟
			Combination patterns ^㉟	The lotus pattern ^㉟
	Data Search (Complete Collection of Chinese Patterns) ^㉟		Plant patterns ^㉟	Tie up branch lines ^㉟
			Animal patterns ^㉟	Crane patterns ^㉟

3.1.2 Extraction of Color

In terms of color, because the Tang Dynasty ceramics have two major porcelain kiln systems of "South Qing and North White", most of the impressions given are cyan and white, but "the south green northern white" is only for the overall development of the ceramic of the description in the tang dynasty, in fact, in addition to celadon and white porcelain in the tang dynasty there are many new varieties, such as "under glaze color porcelain" and "flower porcelain", etc., that is to say, The colors of tang dynasty ceramics were not only cyan and white. In the Tang Dynasty, underglaze painting was already used to decorate ceramics. It first appeared in the Yue Kiln celadon in the Tang Dynasty. At that time, brown underglaze color was used, but it was not popularized and its development was not perfect. Later Hunan Changsha kilns expanded this method and opened up the decorative method of underglaze brown-green painting, which opened up a new world for the decoration of porcelain; The "flower porcelain" of the Tang Dynasty also had a great influence on the ceramic craft and decoration. The "flower porcelain" combined different colors together, for example, some milky white was mixed in the black glaze, or some needle-like blue spots in the milky white. Tri-colored glazed pottery of tang Dynasty is unique in the history of Chinese ceramic technology. The color of Tri-colored glazed pottery of Tang Dynasty is relatively richer. Its glazes are colored with several metal oxides, such as copper oxide fired into green, iron oxide fired into yellow brown, cobalt oxide fired into blue, etc., And the use of lead as the glaze of the flux, in the process of multiple roasting produced chemical changes in the color glaze thickness change, mutual infiltration, color natural coordination, mostly yellow, brown, green three colors, through the mutual penetration between the colors, It will also produce light yellow, maroon, light blue, emerald green, dark green, sky blue, eggplant purple, black, maroon, eggplant purple and other colors, showing the tang Dynasty great power meteorology (Bai, 2021).

Table 2 Extraction of color elements

source	Color extraction	Color value	Color gamut
		C:39% M:67% Y:91% K:2%	
		C:39% M:67% Y:91% K:2%	
		C:39% M:67% Y:91% K:2%	
		C:39% M:67% Y:91% K:2%	
		C:39% M:67% Y:91% K:2%	
		C:39% M:67% Y:91% K:2%	
		C:39% M:67% Y:91% K:2%	
		C:39% M:67% Y:91% K:2%	
		C:39% M:67% Y:91% K:2%	

3.2 Analysis of Decorative Pattern Elements of Tang Dynasty Ceramics from the Perspective of Semiotics

Symbols can be regarded as the perception of carrying meaning, meaning is the potential of a symbol to be interpreted by other symbols (Liu, 2013). Swiss linguist Saussure first proposed the theory of semiotics. He pointed out that a sign is the combination of signifier and signified, signifier refers to the medium that refers to or represents something, and signified refers to the concept or meaning of the thing referred to or involved. The former is expressive and the latter is expressive (Zhang, 2018). The study of semiotics is to summarize the general concept of signs from the "signifier" of objective things, so that the "signified" meaning of signs can be extended to the maximum extent.

The above patterns have been extracted, so this study mainly analyzes the above patterns. First, the collected patterns were divided into four categories: plant patterns, animal patterns, human patterns and geometric patterns.

Of ceramic decoration patterns of the plants in the tang dynasty is bigger, Treasure Phase Flower in the tang dynasty is a very popular a kind of decoration pattern, also is a kind of our unique national character designs, The Treasure Phase Flower, also known as the Paul Lotus or the precious lotus flower, is generally composed of a certain flower (peony and lotus flower) as the main body, and the middle is inlaid with other flowers and leaves of different shapes and sizes (Luo, 2010). Therefore, from the aspect of signifier, it refers to flowers (mostly peony and lotus), but Treasure Phase Flower have a great relationship with Buddhism, among which "Treasure Phase" is the honorific title of Buddhists to Buddha, which is a kind of pattern with the meaning of "treasure" and "fairy", with auspicious and happy meanings. In the Tang Dynasty, people's aesthetics tended to plump, round and vibrant natural beauty, so the application of Cluster pattern was also very extensive. Cluster pattern is a decorative pattern with a round shape and regular arrangement of various patterns. The flowers with complex structure and large diameter are called big round flowers (Wang, 2012). Flowers with simple structure and small diameter are called small round flowers (Wang, 2012). The latter is also known as "ball flower". Two round flowers are connected to form a pattern called "double round flowers" (Wang, 2012). The pattern of round flowers can be defined as an auspicious pattern with harmonious, graceful, compatible and perfect meaning, which is mainly filled with social and cultural contents. Volume grass grain as the main auxiliary foil patterns in tang dynasty porcelain decoration, because of its appearance is downy curve of grass and lamellar named patterns, Japan and north Korea has said the pattern as "tang grass", in the tang dynasty the volume grass grain peony and branches and plus honeysuckle, pomegranate, lotus, chrysanthemum, orchid, etc., Therefore, it was also the embodiment of elegance in the Tang Dynasty. In addition, there is also a great relationship between the rolling grass grain and Buddhism. Its undulating, complicated and mellow characteristics reflect the meaning of Buddhism's reincarnation and eternal life. The lotus pattern, also known as the lotus pattern, symbolizes that "he" has the meaning of reunion and peace, and its characteristics of coming out of the mud without staining are often compared to people's innocence. lotus flower is often used in Buddhism, many bodhisattva in Buddhism is born in lotus, so also has the meaning of auspicious, the lotus alias is also called the hibiscus flowers" Hibiscus " similar to "Husband's", It

is also often compared to love. In the Song of Everlasting Sorrow, Juyi Bai wrote: "Hibiscus is like noodles, willow and eyebrows." There are other natural patterns, such as flowers, leaves, and so on. These natural elements are often sent by people with good wishes for prosperity, symbolizing hope. Dragon and phoenix patterns are the most widely spread animal patterns in China. In Tang Dynasty, dragon was regarded as a symbol of the emperor as a social consensus. However, compared with the descendants, the dragon in Tang Dynasty did not have the breath of holiness and majesty. If the dragon brings people more awe, then the Phoenix brings people more peace and happiness, because the phoenix symbolizes harmony and beauty and makes people feel warm. There are some other bird patterns, which are more purely decorative, such as the common flower and bird patterns, but birds mostly represent freedom; Parrots are also called "love birds" in traditional culture, symbolizing love; Cranes symbolize longevity and auspiciousness in Chinese Taoist culture, and promotion in ancient officialdom. There are very few figures and geometric patterns in tang dynasty ceramic decoration patterns. The image of Lux is common because it is related to religion, representing power and symbolizing the warrior image at that time. The bead pattern is composed of a series of connected circles, which are usually arranged in a zigzag, circular arc or S-shape. In ancient times, the bead pattern symbolizes the sun and mostly represents fire, showing people's worship to the sun at that time (Li & Yuan, 2019). See Table 3 for analysis and classification.

Table 3 Tang Dynasty Pattern Symbol Analysis Table

type ^②	The name of the pattern ^③	Graphic symbol form ^④	Can refer to ^⑤	Referring to the ^⑥
Plant patterns ^⑦	Treasure that flower ^⑧		Peony, lotus or other flowers ^⑨	Auspicious, rich and prosperous ^⑩
	Mass of decorative pattern ^⑪		Round, flower, leaf ^⑫	Harmony, euphemism, compatibility and completeness ^⑬
	Volume grass grain ^⑭		Peony branches and leaves, honeysuckle, chrysanthemum, orchid, lotus, etc ^⑮	Reincarnation eternal life, elegant ^⑯
	Natural grain appearance ^⑰		Flowers, lotus leaves, buds, leaves ^⑱	Their descendants have prosperity, vitality and hope ^⑲
Animal patterns ^⑳	The lotus pattern ^㉑		lotus ^㉒	League member peace, innocence, love ^㉓
	Dragon, phoenix pattern ^㉔		Dragon, chicken ^㉕	Dispelling evil, praying, imperial power, harmony and beauty, peace ^㉖
	The bird patterns ^㉗		The bird to recognize ^㉘	free ^㉙
	The bird patterns ^㉚		The parrot ^㉛	love ^㉜
Character patterns ^㉝	The bird patterns ^㉞		The crane ^㉟	Longevity, good luck, high promotion ^㉟
	Lux pattern ^㉟		people ^㉟	Strength, Buddha, ^㉟
Geometric patterns ^㉟	Beaded pattern ^㉟		The beads ^㉟	Fire, the worship of the sun ^㉟

4. Innovation and Application of Ceramic Patterns in Tang Dynasty

4.1 Innovation of Ceramic Patterns in the Tang Dynasty

The above paper has extracted some patterns of tang dynasty ceramics, and now we will innovate these patterns by shape grammar, simplification method and decomposition and reconstruction method respectively.

In terms of modeling characteristics, it mainly grasps its flat characteristics, showing a strong sense of order, making the contour more concise, and the plane treatment more neat (Wang, 2022). The innovation of patterns through shape grammar mainly applies the basic rules of shape grammar, such as cutting, replacing and contour deformation, to form new patterns by deforming basic patterns. The evolution process is shown in Figure 2. Crane patterns and flower pattern changes as an example, the crane patterns more simple, the original form flight status more realistic, but visual effect on the full and fine enough, in order to make up for this, first by replacing expanded the crane's feathers, and then through the contour deformation make crane wings look more stretch, finally will reshape internal structure, make more fine feathers, Make the overall image more modern; Originally treasure of flower pattern consisting of flowers and winding tendrils, the overall image inside collect soft, stretch enough, first to extract the flowers with the laws of the shear part, then smooth petals becomes slender, finally add around blade, blade than vines look more stretch, because treasure flowers and Buddhism has a lot to do, In order not to change its characteristics, some round balls were added around the pattern to make the whole pattern look more sacred.

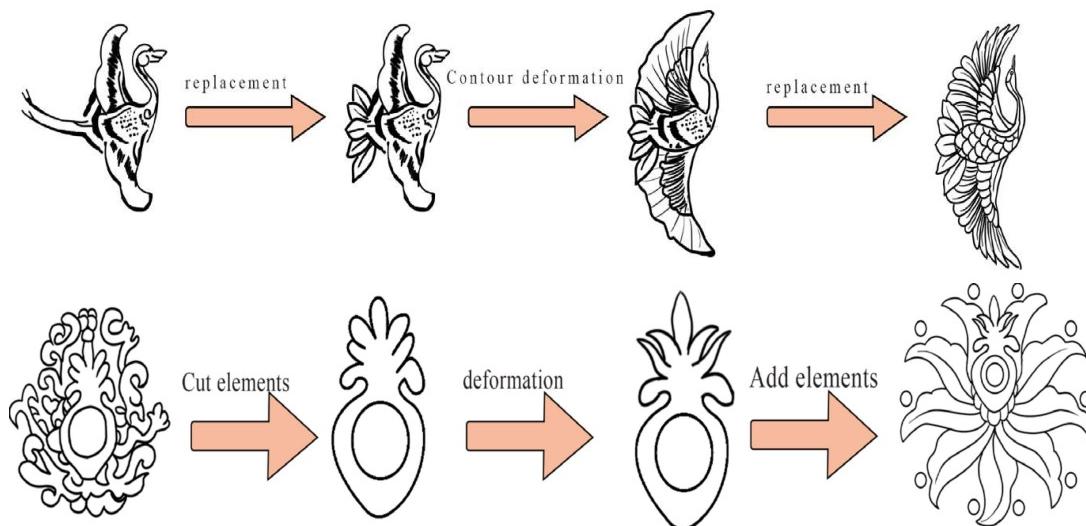


Figure 2 Example of a Shape Grammar innovation Pattern

Lao Tzu once said: five colors blind, five tones deaf, five tastes cool. The truth of ancient language is still applicable in the design, ancient patterns are mostly complex, complex design sometimes make people feel confused, so we can simplify those complex patterns, so that the main performance

is more prominent. Firstly, the main features of the patterns are summarized, and then they are recombined by means of symmetry and repetition. In this paper, dragon patterns extracted from tang Dynasty ceramics are taken as an example, as shown in Figure 3. The pattern is the most characteristic of the place is a portion of the dragon horn, unlike previous impression of dragon horn, the patterns of dragon for spiral Angle, to grasp the characteristics of the curly dragon horn part extracted, and copy the multiple rearrange, make whole grain appearance reorganized after the composition is full and has a rhythm, can appear in the form of background design, as a background, foil main body pattern.

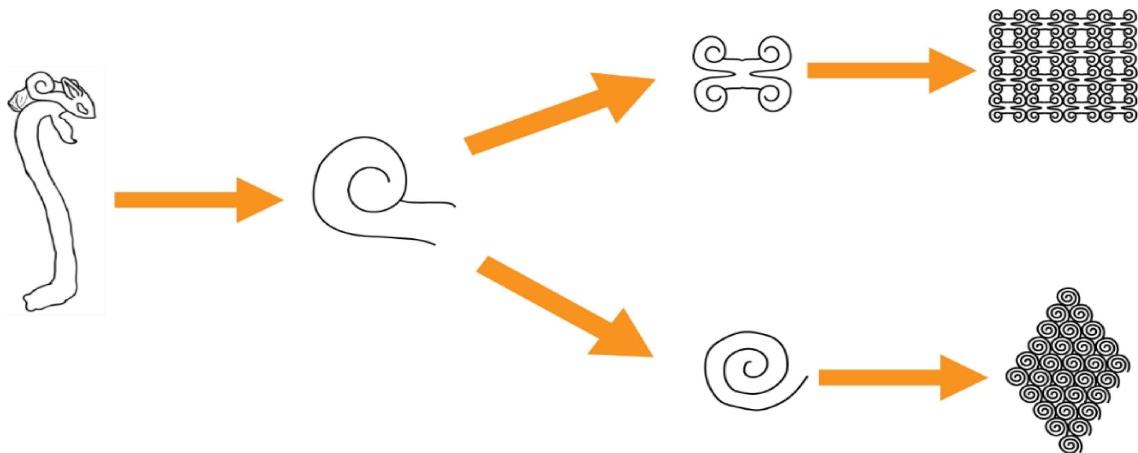


Figure 3 Example of Traditional and Simplified Innovative Pattern - Dragon Pattern Change

The third method is decomposition and reconstruction based on the extraction of the overall shape of the pattern. Specifically, the existing pattern is decomposed in a certain way, and then the decomposed shape is integrated and recombined according to the design rules, so as to break the original impression and achieve the purpose of pattern innovation. The pattern of pattern decomposition reconstruction is shown in Figure 4. After decomposition, nine basic elements are extracted from the pattern, and then five elements that can be deformed are screened out. Then, single or multiple elements are selected for combination and arrangement, and repetition, symmetry, rotation and other methods are used to enrich the pattern and form new elements.

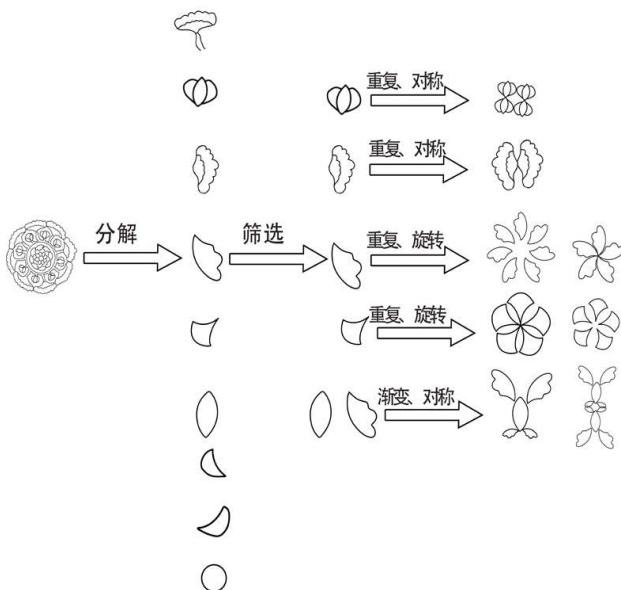


Figure 4 Example of Innovative Pattern by Decomposition and Reconstruction Method - Group Pattern Change

4.2 Design and Application of Tang Dynasty Ceramic Patterns

Pattern innovation design is not a pattern in the design of the application of the simple packing, first of all should give full consideration to the traditional, the purpose is to better carry forward the traditional culture is innovation, rather than completely give up, in this paper, based on semiotics of parsing the connotation of Chinese, it in the application for our innovation pattern has very good guidance, Studies have shown that, in the first 20 seconds during people's observing an object, color information accounts for 80% of the whole impression (Xu, 2021). Therefore, the extraction of color can also be applied to new patterns, Make traditional characteristics more prominent; Secondly, the rationality of pattern application should be considered. The most reasonable application scheme can be formulated by combining the connotation and semantic meaning of pattern and visual characteristics from the aspects of product type and function. Finally, the psychological needs of consumers should be fully considered to meet the psychological expectations of the public in order to better create the value of design.

In the use of patterns, we should consider comprehensively according to the different types of products and the internal meaning of the patterns analyzed by semiotics at the same time taking into account the feeling of beauty of the public. The specific application is shown in Figure 5.5 a is isolated from the dragon pattern of the dragon horn changes, since the ancient times not only represent auspicious dragon, in the fairy tale is in charge of the wind and rain, so the application on the umbrella is very fit, the combination of the pattern regardless of rank or landscape has a regular interval, like rain, is a kind of order in the United States, with the rainy days bring out the best in each other again at the same time do not show drab, See 5 a1.5 b crane patterns and 5 c treasure flower patterns both

have excellent moral, crane pattern main longevity, harmonious, auspicious, the pattern innovation spread full, after duplicate symmetric reverse more complete whole, plus from the tang dynasty ceramic color more primitive simplicity, elegant and not tacky, in some clothing, handbags, hats, are very applicable, see 5 b1, b2. Baoxiang flowers have certain Buddhist meanings. According to Buddhism, Treasure Phase Flower can pray for people and bring good luck, so they are very suitable for some kinds of daily use. Moreover, the redesigned Treasure Phase Flower are full of vitality, which will add more tension to products. 5D is the product of the reconstruction after the decomposition of the group pattern. After repeated spreading, it gives people the visual feeling of being in the flowers, making people feel warm. When used in some pillows, quilts and other fabrics, it can make people more relaxed. Each type has been enumerated, and other similar patterns will not be described here.



Figure 5 Application demonstration diagram

5. Conclusion

In the Tang Dynasty, China had a world-leading civilization, which was extremely brilliant in various fields, especially in ceramics, and advanced in technology. the decorations are created under glaze color porcelain", "flower porcelain" and so on the varieties of new decoration, decoration pattern became more and more rich, the development of the full ceramic has extremely important influence. With the development of The Times, the aesthetic is in constant change, for the use of the previous designs are less and less, the study of the tang dynasty ceramic decorative pattern, helps to integrate into modern factors in the pattern in the tang dynasty, and use it in life, not only can add new

momentum for design, add aesthetic feeling for modern life, can also open up a new way of cultural inheritance, Make Chinese culture long-lasting and timeless.

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